

WHAT IS CLAIMED:

1. A multilayer electronic device, comprising:
 - a plurality of dielectric layers;
 - a plurality of electrode layers interleaved with selected of said plurality of dielectric layers to form a multilayered arrangement, said multilayered arrangement defined by first and second opposing surfaces and a plurality of side surfaces;
 - at least one respective first and second transition layer electrode portion provided on the first surface of said multilayered arrangement;
 - a cover layer provided over said at least one respective first and second transition layer electrode portion, said cover layer formed to define a plurality of openings therethrough for exposing a portion of said at least one respective first and second transition layer electrode portions;
 - at least one first peripheral termination formed along selected side surfaces of the multilayered arrangement and electrically connecting selected of said electrode layers and said at least one first transition layer electrode portion; and
 - at least one second peripheral termination formed along selected side surfaces of the multilayered arrangement and electrically connecting selected of said electrode layers and said at least one second transition layer electrode portion.
2. A multilayer electronic device as in claim 1, wherein said plurality of electrode layers and said at least one respective first and second transition layer electrode

portions respectively include a plurality of electrode tabs
extending to and exposed along selected side surfaces of
said multilayered arrangement, wherein said at least one
first peripheral termination electrically connects selected
electrode tabs from the at least one first transition layer
electrode portion and selected of the electrode layers, and
wherein said at least one second peripheral termination
electrically connects selected electrode tabs from the at
least one second transition layer electrode portion and
selected of the electrode layers.

3. A multilayer electronic device as in claim 1, wherein
said at least one respective first and second transition
layer electrode portions are generally U-shaped or
rectangular-shaped.

4. A multilayer electronic device as in claim 1, wherein
multiple of said plurality of dielectric layers are
provided on the second surface of said multilayered
arrangement.

5. A multilayer electronic device as in claim 1, further
comprising a plurality of via terminations formed in the
openings defined by said cover layer.

6. A multilayer electronic device as in claim 5, further
comprising a plurality of solder balls connected to
selected of the plurality of via terminations.

7. A multilayer electronic device as in claim 5, wherein

said plurality of via terminations comprise a first layer of metallic material, a second layer of resistor-polymeric material, and a third layer of metallic material.

8. A multilayer electronic device as in claim 5, wherein said plurality of via terminations comprise multiple layers of different metallic materials, wherein selected of said multiple layers are formed by electroless plating.

9. A multilayer electronic device as in claim 5, wherein selected of said plurality of via terminations, said at least one first peripheral termination and said at least one second peripheral termination are directly plated to exposed electrode portions.

10. A multilayer electronic device as in claim 1, wherein selected of said electrode layers and said at least one respective first and second transition layer electrode portions comprise ruthenium oxide such that the multilayer electronic device is characterized by a predetermined amount of equivalent series resistance.

11. A multilayer electronic device as in claim 1 wherein said at least one first and second peripheral terminations extend along a substantially entire dimension of a respective selected side surface of the multilayer electronic device and wrap around to at least one surface adjacent to said respective selected side surface.

12. A multilayer electronic device as in claim 1, further comprising:

- at least one additional respective first and second transition layer electrode portion provided on the second surface of said multilayered arrangement;
- 5 an additional cover layer provided over said at least one additional respective first and second transition layer electrode portion, said additional cover layer formed to define a plurality of openings therethrough for exposing a portion of said at least one additional respective first and second transition layer electrode portions;
- 10 wherein said at least one first peripheral termination electrically connects selected of said electrode layers, said at least one first transition layer electrode portion provided on the first surface of said multilayered arrangement, and said at least one additional first transition layer electrode portion provided on the second surface of said multilayered arrangement; and
- 15 wherein said at least one second peripheral termination electrically connects selected of said electrode portion layers, said at least one second transition layer electrode portion provided on the first surface of said multilayered arrangement, and said at least one additional second transition layer electrode portion provided on the second surface of said multilayered arrangement.
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13. A multilayer electronic device as in claim 12, further comprising a plurality of via terminations formed in the openings defined by said cover layer and in the openings defined by said additional cover layer.

14. A multilayer electronic device as in claim 13, further

comprising a plurality of solder balls connected to selected of the plurality of via terminations.

15. A multilayer capacitor, comprising:

a plurality of dielectric layers;

5 respective pluralities of first and second electrode layers interleaved with selected of said plurality of dielectric layers to form a multilayered assembly, said multilayered assembly defined by topmost and bottommost layers and a plurality of adjacent side surfaces;

10 at least one first via termination provided through the topmost layer of said multilayered assembly and electrically connected to one of said first electrode layers;

15 at least one second via termination provided through the topmost layer of said multilayered assembly and electrically connected to one of said second electrode layers;

20 at least one first peripheral termination provided along selected side surfaces of said multilayered assembly and electrically connecting said plurality of first electrode layers; and

25 at least one second peripheral termination provided along selected side surfaces of said multilayered assembly and electrically connecting said plurality of second electrode layers.

16. A multilayer capacitor as in claim 15, wherein each of said plurality of first electrode layers respectively includes a plurality of electrode tabs extending to and exposed along selected side surfaces of said multilayered assembly, wherein said at least one first peripheral

termination electrically connects selected electrode tabs from the plurality of first electrode layers, and wherein said at least one second peripheral termination electrically connects selected electrode tabs from the plurality of second electrode layers.

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17. A multilayer capacitor as in claim 15, wherein the bottommost layer of said multilayered assembly comprises multiple of said plurality of dielectric layers.

18. A multilayer capacitor as in claim 15, further comprising a plurality of solder balls connected to said at least one first via termination and to said at least one second via termination.

19. A multilayer capacitor as in claim 15, wherein selected of said at least one first via termination, said at least one second via termination, said at least one first peripheral termination and said at least one second peripheral termination comprise a first layer of metallic material, a second layer of resistor-polymeric material, and a third layer of metallic material.

5 20. A multilayer capacitor as in claim 15, wherein selected of said at least one first via termination, said at least one second via termination, said at least one first peripheral termination and said at least one second peripheral termination comprise multiple layers of different metallic materials, wherein selected of said multiple layers are formed by plating technology.

21. A multilayer capacitor as in claim 15, wherein

selected of said first and second electrode layers comprise ruthenium oxide such that the multilayer capacitor is characterized by a predetermined amount of equivalent
5 series resistance.

22. A multilayer capacitor as in claim 1, wherein said at least one first and second peripheral terminations extend along a substantially entire dimension of a respective selected side surface of said multilayer 5 capacitor and wrap around to at least one surface adjacent to said respective selected side surfaces.

23. A multilayer capacitor, comprising:
a plurality of first layers, each first layer having a sheet of dielectric material delimited laterally by edges and partially covered by a first electrode plate;
5 a plurality of second layers, each second layer having a sheet of dielectric material delimited laterally by edges and partially covered by a second electrode plate;
said first and second layers alternately stacked in a multilayered assembly such that adjacent first and second 10 electrode plates form opposing capacitor plates, said multilayered assembly characterized by first and second opposing surfaces and a plurality of side surfaces;
a transition layer comprising a sheet of dielectric material and at least one respective first and second 15 transition layer electrode portion provided on the sheet of dielectric material, said transition layer provided on the first surface of said multilayered assembly; and
a cover layer provided over said transition layer, said cover layer formed to define a plurality of openings therethrough for exposing a portion of said at least one 20

respective first and second transition layer electrode portions;

wherein said first electrode plates and said at least one first transition layer electrode portion are exposed along selected side surfaces of the multilayered assembly

25 along selected side surfaces of the multilayered assembly in at least one substantially linear alignment such that said first electrode plates and said at least one first transition layer electrode portion are connected by at least one first peripheral termination;

30 and wherein said second electrode plates and said at least one second transition layer electrode portion are exposed along selected side surfaces of the multilayered assembly in at least one substantially linear alignment

such that said second electrode plates and said at least one second transition layer electrode portion are connected 35 by at least one second peripheral termination.

24. A multilayer capacitor as in claim 23, wherein each said at least one respective first and second transition layer electrode portions are generally U-shaped or rectangular-shaped.

25. A multilayer capacitor as in claim 23, further comprising at least one dielectric sheet provided on the second surface of said multilayered assembly.

26. A multilayer capacitor as in claim 23, further comprising a plurality of via terminations formed in the openings defined by said cover layer.

27. A multilayer capacitor as in claim 26, further

comprising a plurality of solder balls connected to selected of the plurality of via terminations.

28. A multilayer capacitor as in claim 26, wherein said plurality of via terminations comprise a first layer of metallic material, a second layer of resistor-polymeric material, and a third layer of metallic material.

29. A multilayer capacitor as in claim 26, wherein said plurality of via terminations comprise multiple layers of different metallic materials, wherein selected of said multiple layers are formed by plating technology.

30. A multilayer capacitor as in claim 23, wherein selected of said first and second electrode plates and said at least one respective first and second transition layer 5 electrode portions comprise ruthenium oxide such that the multilayer capacitor is characterized by a predetermined amount of equivalent series resistance.

31. A multilayer capacitor as in claim 23, wherein said at least one first and second peripheral terminations extend along a substantially entire dimension of a respective selected side surface of said multilayer 5 capacitor and wrap around to at least one surface adjacent to said respective selected side surface.

32. A multilayer capacitor as in claim 23, further comprising:

an additional transition layer comprising a sheet of dielectric material and at least one respective additional 5 first and second transition layer electrode portion

provided on the sheet of dielectric material, said additional transition layer provided on the second surface of said multilayered assembly; and

10 an additional cover layer provided over said additional transition layer, said additional cover layer formed to define a plurality of openings therethrough for exposing a portion of said at least one respective additional first and second transition layer electrode portions;

15 wherein said at least one first peripheral termination electrically connects each said first electrode plate, said at least one first transition layer electrode portion and said at least one additional first transition layer electrode portion; and

20 wherein said at least one second peripheral termination electrically connects each said second electrode plate, said at least one second transition layer electrode portion and said at least one additional second transition layer electrode portion.

33. A multilayer capacitor as in claim 23, further comprising a plurality of via terminations formed in the openings defined by said cover layer and in the openings defined by said additional cover layer.

34. A multilayer capacitor as in claim 33, further comprising a plurality of solder balls connected to selected of the plurality of via terminations.